

EXHIBIT 27



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**Deposition of
Charles Benbrook, Ph.D.**

Date: May 23, 2018

Case: Ronald Peterson and Jeff Hall v. Monsanto Company, et al.

No. 1622-CC01071

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IN THE CIRCUIT COURT OF THE CITY OF ST. LOUIS
STATE OF MISSOURI

RONALD PETERSON and JEFF HALL,)	
)	
Plaintiff(s),)	
)	
vs.)	1622-CC01071
)	
MONSANTO COMPANY; OSBORN &)	
BARR COMMUNICATIONS, INC.;)	
OSBORN & BARR HOLDINGS, INC.,)	
)	
Defendant(s).)	

VIDEOTAPED DEPOSITION UPON ORAL EXAMINATION OF
CHARLES BENBROOK, Ph.D.

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MAY 23, 2018
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CLARKSTON, WASHINGTON

REPORTED BY: PATSY D. JACOY, CCR 2348

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1 Q. (BY MR. HOLLINGSWORTH) Sir, you mentioned
2 impurities in your report, the impurities that results
3 from the glyphosate manufacturing process. Do you
4 recall that?
5 A. Uh-huh.
6 Q. Okay.
7 A. A short, very short section.
8 Q. Sure. And you specifically mention NNG and
9 formaldehyde, correct?
10 A. Correct.
11 Q. Every aspect of the -- first of all,
12 impurities are monitored by EPA and for the -- for
13 formaldehyde and NNG they're modified -- they're
14 monitored to make sure that they are below specified
15 limits, correct?
16 A. Well, yeah, when the agency is aware of their
17 presence and especially if they have a toxicological
18 concern about them, impurities can get a lot of
19 attention in the regulatory process. For example,
20 dioxin in some of the phenoxy herbicides was the
21 primary basis of concern about the toxicity of those
22 products.
23 Q. EPA's position, the detection -- is -- let me
24 restate that.
25 To be clear, it is EPA's position that the

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1 detections of impurities below regulatory limits are
2 not carcinogenic concerns, correct?
3 A. Well, yes, in general, they would -- they
4 would assess the levels and risk associated with the
5 impurities in essentially the same way they would the
6 active ingredient. They would apply kind of the same
7 standards, yeah.
8 Q. And when testing the active ingredient, they
9 can, in fact, test the impurities in the active
10 ingredient, correct?
11 A. Well, EPA doesn't -- doesn't do those tests
12 really. It's the -- they require the companies to do,
13 you know, environmental fate studies and residue
14 metabolism studies. That's where they would pick up
15 the impurities is in the residue database as part of
16 the tolerance-setting process.
17 Q. EPA monitors the company's data on
18 glyphosate-based herbicides and determines whether the
19 impurities are below specified limits, correct?
20 A. When -- yes, when they become aware that
21 there's a -- a potential for impurities in one of the
22 manufacturing processes, they'll take that into account
23 in making a decision on the tolerances.
24 Q. Do you claim that Monsanto's glyphosate-based
25 herbicides ever had impurities that existed in amounts

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1 above the EPA certified limits?
2 MR. LITZENBURG: Object to form.
3 A. You know, I -- EPA became aware of the -- the
4 NNG impurity and formaldehyde, and then there was an
5 impurity in one of the surfactants quite early in the
6 regulatory history, and they required Monsanto to
7 submit data to them that established the levels, and
8 they -- in fact, many batches of -- of -- of
9 manufactured and formulated product from different
10 plants I remember there was actually quite extensive
11 data collected by Monsanto and submitted to the agency,
12 and they did do a toxicological evaluation and they did
13 reach a judgment that the levels of the impurities
14 were -- did not exceed their level of concern. And --
15 and they -- there really was -- has been relatively
16 little focus for the last 30 years of -- of regulation
17 of glyphosate-based herbicides on those impurities.
18 Q. (BY MR. HOLLINGSWORTH) Right. So it's
19 certainly not your opinion that Monsanto's
20 glyphosate-based herbicides ever had impurities that
21 existed in amounts above the EPA's certified limits,
22 correct?
23 A. Correct.
24 Q. Do you claim that Monsanto's glyphosate-based
25 herbicides ever specifically had formaldehyde at levels

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1 above EPA certified limits?
2 A. I -- I wouldn't be surprised if I went back
3 and carefully reviewed this part of the record, which
4 is -- again, it's very old. There probably wasn't an
5 EPA certified limit. I mean, for one thing, don't
6 forget, the EPA had only been in existence a couple of
7 years when these first actions were -- on glyphosate
8 were being done. They became aware of the NNG and the
9 formaldehyde and later on this dioxane contaminant and,
10 you know, they -- they asked questions about the levels
11 and I -- I think -- I vaguely remember that some other
12 part of EPA had a regulatory level, and they assessed
13 that, or maybe it was an international level, I don't
14 really recall the details, but there -- you know, I
15 think the -- the record shows that there was a -- a --
16 an assessment of these impurities and a judgment was
17 reached that they were -- they did not trigger EPA's
18 level of concern, so yeah, that's my understanding of
19 the record.
20 Q. Whether it's formaldehyde, NNG, dioxane or any
21 other glyphosate-based herbicides, EPA has always
22 determined that those impurities are below specified
23 limits as far as you know, correct?
24 A. As far as I know, correct.
25 Q. Is it your opinion that impurities found in

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1 glyphosate-based herbicides at levels below EPA
 2 certified limits can cause non-Hodgkin's lymphoma?
 3 **A. I -- I have no -- no reason to believe that,**
 4 **and I would -- would find that unlikely, but, you know,**
 5 **it's -- it's possible I suppose.**
 6 Q. You don't have the expertise to determine
 7 whether impurities found in glyphosate-based herbicides
 8 at levels below EPA certified limits can cause NHL,
 9 correct?
 10 **A. I'm -- I certainly don't have a crystal ball**
 11 **that could make that determination, and I -- I doubt**
 12 **that anybody has -- has done the kind of in-depth work**
 13 **that would be required to definitively judge that, and**
 14 **I know that Monsanto actually did commission a two-year**
 15 **feeding study on NNG in the early days, but it -- the**
 16 **study was terminated because of excessive mortality in**
 17 **one of the treatment groups and it wasn't repeated**
 18 **and -- but, you know, the levels are -- the levels that**
 19 **have been consistently reported were very low and it**
 20 **was a -- it has been the judgment of EPA all along that**
 21 **they didn't -- they didn't feel that the level of risk**
 22 **was high enough to warrant any further assessment.**
 23 Q. Right. And you don't hold the opinion that
 24 impurities in glyphosate-based herbicides at the level
 25 in which they actually exist are causing NHL, correct?

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1 **A. Correct.**
 2 Q. I want to move on to some other parts of the
 3 globe, Dr. Benbrook. Sir, you testified in April of
 4 2015 right after the IARC classification of glyphosate
 5 that the currently standing judgment of the EPA is that
 6 glyphosate is not a carcinogen. Do you recall that?
 7 **A. Yes.**
 8 Q. You testified that glyphosate-based herbicides
 9 are under active review by the US -- in the US by EPA
 10 and also in Europe by the European community, correct?
 11 **A. At that time, yes.**
 12 Q. You testified that with the IARC judgment
 13 being published there's going to be intense scrutiny on
 14 the oncogenicity of both glyphosate technical material
 15 and formulated Roundup herbicides, correct?
 16 **A. Correct.**
 17 Q. That intense scrutiny of glyphosate-based
 18 herbicides post IARC classification of glyphosate
 19 referred, in part, to intense scrutiny by worldwide
 20 regulators, correct?
 21 **A. Of course, that was part of it.**
 22 Q. Sir, IARC itself does not regulate the
 23 substance it -- substances it classifies, correct?
 24 **A. Correct.**
 25 Q. IARC leaves the regulation of those substances

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1 to national governments, correct?
 2 **A. Yes.**
 3 Q. And when we say IARC leaves that to national
 4 governments, what that means -- or one thing that means
 5 is that the applicable -- it leaves it to the
 6 applicable regulatory agencies, correct?
 7 **A. Yeah, operating under the statutes and laws of**
 8 **the countries in which they operate.**
 9 Q. Such as --
 10 **A. Which differ.**
 11 Q. And such as EPA, Health Canada, EFSA, you're
 12 familiar with all of those, correct?
 13 **A. Correct.**
 14 Q. And Australia, New Zealand, every country for
 15 the most part has a regulatory agency that is
 16 regulating the use of pesticides in that country,
 17 correct?
 18 **A. Correct.**
 19 Q. In major countries the health regulators have
 20 scientific staffs with expert toxicologists,
 21 epidemiologists, pathologists and other specialists,
 22 correct?
 23 **A. Yes.**
 24 Q. They're qualified to evaluate and spend a lot
 25 of time evaluating the safety of various substances

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1 including herbicides, correct?
 2 **A. Well, it -- it varies, but certainly several**
 3 **countries conduct the same -- same sort of evaluation**
 4 **that the US EPA does, but certainly some other**
 5 **countries sort of follow the lead of the US or EFSA or**
 6 **other developed countries that have the scientific**
 7 **expertise and the resources to do the detailed kind of**
 8 **work that's required to render these kinds of**
 9 **judgments.**
 10 Q. You've commented in your expert report and
 11 deposition about the ongoing scientific discussion
 12 about the standards that should be used in assessing
 13 carcinogenicity including that of Roundup, correct?
 14 **A. Yes, I did testify to that.**
 15 Q. And, of course, the scientific evaluations
 16 made by EPA and other worldwide regulators are part of
 17 that ongoing discussion, correct?
 18 **A. Yes.**
 19 Q. There are articles and letters to the editor
 20 and discussions at conferences and so on debating about
 21 the decisions made by regulators, the standards they
 22 employ and the evidence they consider, correct?
 23 **A. Yes.**
 24 Q. In reaching your opinions, you certainly
 25 considered the evaluations of EPA, EFSA and other